

BASIC INFORMATION**Application No.:** 9805148-5**Filing date:** 28/Feb/1997**PCT Application No.:** PCT/CA97/00135**Publication Number:** 56713**Priority claimed:** 29/02/1996 CA 2,170,681**Title of Invention:** INSULATED WALL AND COMPONENTS THEREFOR**Applicant/Proprietor:** ROYAL BUILDING SYSTEMS (CDN) LIMITED (CA)
1 ROYAL GATE BOULEVARD, WOODBRIDGE, ONTARIO L4L
8Z7
CANADA**Inventor(s):** DE ZEN, VITTORIO
300 GREENBROOK DRIVE, WOODBRIDGE, ONTARIO L4L 1A6
CANADA**International Patent Classification:** E04B 2/86**Patent Agent:** DREW & NAPIER**PCT Publication No.:** WO 97/32095**Date of grant of patent:** 21/Dec/1999

INSULATED WALL AND COMPONENTS THEREFOR

FIELD OF THE INVENTION

5 This invention relates to novel wall structures for housing and other buildings and novel components therefor.

More particularly the invention relates to the creation of a wall structure of confined poured concrete which is fully insulated at the time of its
10 erection and novel components for use in forming same.

BACKGROUND OF THE INVENTION

15 Conventionally poured concrete walls used, for example, as basement and other exterior walls for housing and other building structures involve the erection of suitable form work defining the wall shape, pouring concrete into the form work, and, when same is sufficiently set, removing the form work.

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It has been proposed in European Patent Application EP 0 320 745 to erect a wall of hollow interlocking thermoplastic components which then can be filled with cementitious material if desired.

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In my early PCT application PCT/CA94/00274, I disclosed an arrangement of extruded thermoplastic components which can be interlocked together to form a wall structure for receiving concrete therein with internal communication provided between the interlocking components so that concrete poured therein can flow therebetween to provide a thermoplastic
30 wall structure held in interlocked relation and converted to a permanent wall by the concrete confined therein.

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In all such previous wall structures, the need to insulate the walls against heat transfer requires the carrying out of entirely separate operations and procedures usually by different trades which add significantly to the building costs.

REPLACEMENT SHEET

- (a) -

French Patent Application FR-A-2721045, published December 15th, 1995, discloses a wall by forming together wall forming components which are made up of a number of individual members joined together by gluing, soldering or the like. These members include curved thermoplastic panels which are arranged with their concave sides turned outwardly held spaced by transverse bracing. The concave sides of the panels are closed with tie beams to provide a space having an arcuate wall into which insulation material may be placed. The space between the convex surfaces of the plates is filled with concrete which exerts pressure on the curved plates either directly or, for example, through flat panels covering the convex side of the curved panels to receive the concrete pressure and transmit the stress to the curved panels through connecting elements.

REPLACEMENT SHEET

30 AUG 1999

SUMMARY OF THE INVENTION

5 The present invention is directed to eliminating the aforesaid need to separately insulate building walls by creating the walls as fully insulated walls at the time of their erection.

 According to the present invention, the novel insulated wall
10 structure is formed with upright hollow thermoplastic extrusions connected together in a row, with the extrusions presenting a row of compartments adapted to receive concrete extending along the length of the wall structure and a row of compartments containing or adapted to receive insulation
15 material also extending along the length of the wall along side or in parallel with said row of concrete receiving compartments whereby when said compartments adapted to receive concrete are filled with concrete and said insulation receiving compartments are filled with insulation, the insulation in
20 said insulation receiving compartments is positioned to block heat transfer through the wall.

 According to the preferred embodiment of the invention, the hollow thermoplastic extrusions are provided with interlocking means to interlock
25 with adjoining extrusions and the row of concrete receiving compartments are in internal communication so that concrete can flow between compartments.

 As will be understood, any suitable insulating material such as
30 fiberglass or the like may be introduced into the insulation receiving compartments or the insulation receiving compartments may be filled with foamed insulation such as polyurethane foam or the like as desired.

 The present invention also resides in providing novel wall forming
35 units or components in the form of elongated hollow thermoplastic extrusions adapted to be assembled into a wall structure and having internal walls to provide the requisite concrete receiving and insulation receiving or containing compartments.